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# **Regional income disparities, monopoly & finance**

by

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## **Regional income disparities, monopoly & finance**

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### **Abstract**

Many of the most prosperous places in the U.S. are hotbeds of technology and also the home bases of companies which exercise monopoly power across much larger territories – nationally, or even globally. This paper makes four arguments about regional income disparities. First, monopoly, and the market for new prospective monopolies amplifies agglomeration economies, making locations invincible and inimitable. Second, the taxes imposed by the monopoly firms on a wide range of economic activity, together with the restrictions they are able to impose on the dissemination and use of technology, further inhibit local economic development in other places. Third, financialization – the power of the financial sector over both firms which are receiving financing and firms which are paying cash out – serves to feed capital to these spatially concentrated monopolies – and prospective monopoly “while squeezing it out of other places and industries. Finally, we conclude that the most efforts at local economic development would be best furthered by breaking up the concentrated economic power of technology and finance.

Keywords: regional income distribution, monopoly, market power, economic geography, technology, financial capital

JEL Classification: R11, R12, F61, F62, F65, O33

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## **1. Introduction**

The growth of inequality has profound geographic implications. The paradox of our time is that we live with powerful technology accompanied by stagnating wages and a general malaise. While some choose to debate issues of measurement and magnitude, after Piketty and Saez (2003) it is impossible to ignore the preponderance of evidence that not all individuals and communities have not shared equally in economic prosperity over the past forty years. A small percentage of individuals are doing well while the incomes of the majority of the population have stagnated. There is an increased recognition of the importance of agglomeration economies to the productivity of firms. The benefits are external to firms but occur dynamically, are geographically confined and imply that it is possible to construct locational advantage through encouraging the development of entrepreneurial ecosystems. Yet, even after significant public investment, rates of entrepreneurial dynamism are below historical levels (Decker et al. 2017). A third trend is a rise in monopoly power, due to a combination of new network technologies and the retrenchment of both regulation and anti-trust enforcement. Finally, and most certainly related, there has been a significant increase in the role of the financial sector, with a growing influence of finance in firm governance.

These trends have significant geographic implications. Reflections on the geography of rising inequality in both the U.S. and Europe focus on differences in employment opportunities and erosion in wages (e.g. Soskice 1990; Glasmeier 2018), the impacts of housing prices (Andrés Rodríguez-Pose and Storper 2019), mortgage financing (Aalbers 2009; 2017) and the recent financial crisis (e.g. Cuadrado-Roura, Martin, and Rodríguez-Pose 2016). Others have considered skilled-biased technological change, globalization, and the erosion of institutions (Florida and Mellander 2016; Iammarino, McCann, and Ortega Argilés 2018; Western and Rosenfeld 2011). Yet, the link between agglomeration economies, monopoly power and financial dynamics has not yet been made.

Policies to reduce spatial inequality often focus on promoting innovation and entrepreneurship to enhance the performance of relatively deprived places or populations. The logic is that places that are able to successfully launch innovative companies will achieve some competitive advantage and capture new industries, with the resulting wealth creation, building of related local supply chains, and opportunity for new jobs creating prosperity. These policies

implicitly treat agglomeration economies, and the resulting localized increasing returns, as an attribute of place, external to firms yet critical to their success.

Yet, over the past four decades, this model has not worked well in most places. In this paper we make four arguments, focusing in particular on the U.S. case. We are motivated to examine the spatial distribution of income disparities against the location of monopolies. Places that are doing relatively well have benefitted from monopolies that function as localized economic fortresses, making it impossible for relatively deprived areas to find niches that would bring prosperity. Localization economies cannot compete against monopoly power, which in a technologically dynamic setting complements and amplifies benign Marshallian external economies. While monopoly rents are shared with local employees, contractors and suppliers, producing concentrations of high wages within clusters of monopoly firms, monopolies are able to pull resources from other firms and regions to their location, reinforcing their advantage. This deprives other businesses, and their locations, of capital, revenue, and opportunity – in short, of the chance to generate income and prosperity. The growth of monopoly power has been accompanied by increased financialization and the concentration of power in financial markets that further impedes the relative standing of poor and declining places. In this setting, addressing the spatial distribution of income inequality requires changes in regulations, laws, and enforcement, aimed at breaking the power of monopoly.

Before turning to these arguments, the next section presents evidence about the geographic distribution of income in the U.S. over the past 40 years. Section 3 discusses the growth of monopoly power, particularly in relation to networks, digital platforms, intellectual property rights, and financial capital, while Section 4 illustrates the interactions between Marshallian agglomeration economies and monopoly. Section 5 argues that such techno-monopoly clusters, by draining financial resources locally and globally and rising barriers to knowledge diffusion, hold other places back preventing economic growth and development elsewhere. The role of financialization, considered in a context of spatially concentrated monopoly, is discussed in Section 6. Section 7 concludes with suggestions for further inquiry.

## **2. The Changing Geography of Prosperity**

To capture income disparities, Reeves (2017) argues for considering the top 20% of earners. These are the better paying jobs in the economy. This group has done relatively well in

the wake of skill-biased technological change and are linked to the individuals at the top of the income distribution. Geography is absent from Reeves' considerations, but his construct is useful in examining the changing geography of prosperity. Figure 1 shows the share of employed people with earnings above the 80<sup>th</sup> percentile, or the top 20% of the US earning distribution in 1980 (1a), 2016 (1b), and the change from 1980 to 2016 (1c). Data are shown for commuting zones, with map areas proportional to population.

[Figure 1 about here]

In 1980, the highest concentration of well-paid workers was in Gary, Indiana – a steel manufacturing center just east of Chicago; followed by Detroit (car manufacturing), and Washington DC. In 2016, the highest concentration of well-paid workers was in Washington DC, followed by San Francisco-San Jose, New York, and Boston. Looking to the change in position from 1980 to 2016 – each locality's rise, or fall, in the share of workers earning more than the 80<sup>th</sup> percentile nationally – the big winners were Washington DC (again), Boston, and San Francisco-San Jose, along with secondary hubs in banking (Charlotte, North Carolina) and technology (Seattle, Washington; Raleigh-Durham-Chapel Hill, North Carolina; Austin, Texas). Most of the industrial heartland declined in relative terms, including yesterday's technological leaders, like Detroit, and Rochester NY (home of Kodak and Xerox). Sunbelt metropolises, like Houston and Los Angeles, also lost ground. Despite claims of the primacy of cities, some large urban areas, such as Chicago and Atlanta, have much smaller shares of these better paid jobs. Places in the middle of the country have lost higher wage earners. And, before we put the increased concentration of better paid jobs in New York down to broad urbanization economies, we must consider that salaries in finance ballooned, relative to engineers with comparable educations, as deregulation progressed, starting around 1980 (Philippon and Reshef 2012).

Some of the spatial concentration of better paid jobs might be put down to simple localization economies, skill-based technological change and the consequent emergence of specialized headquarters clusters (e.g., Moretti 2012). Yet, as we celebrate and encourage entrepreneurship, current technologies exhibit a winner take all dynamic, which creates monopoly power (for examples, see Weitzel, Beimborn and König 2006). And notably, the current concentrations of high-paid jobs are located in places with well-known firms that have achieved monopoly status. Consider the location of Apple, Google, and Facebook in Silicon Valley; Microsoft, and Amazon in Seattle; and Qualcomm in San Diego.

### 3. The Rise of Monopolies

Monopoly, or more generally, market power and cost-price markups<sup>1</sup>, have grown in the United States (De Loecker and Eeckhout 2017; Eggertsson, Robbins, and Wold 2018). This pattern has been repeated in other countries (De Loecker and Eeckhout 2018) and is evident across sectors. Grullon, Hund and Weston (2018) find that three-quarters of all U.S. industries became more concentrated between 1997 and 2012. The rise of monopoly comes from a mix of digital technology, extended intellectual property rights, and lack of regulatory oversight.

Digital technologies benefit from network economies – situations in which, as the number of users rises, the average value to the consumer rises, or the average cost falls (Evans 2003; Gawer 2010; Rochet and Tirole 2006). An important subset of network business models are platforms, whose service is to establish links between users at both ends. Kenney and Zysman (2016:62) argue: “We are in the midst of a reorganization of our economy in which the platform owners are seemingly developing power that may be even more formidable than was that of the factory owners in the early industrial revolution.”

The platform monopoly strategy is to find a segment of an open digital network that can be monetized if it is locked down, or enclosed in a *walled garden*. With the rise of the platform economy, we have moved from using open networks based on universal protocols supporting e-mail and SMS messages, to messaging protocols that keep our messages within one of the various social media platforms. Competition in PC and server operating systems and standard office applications – all the elements of which are available on an open source basis – has long since been under Microsoft’s control of the critical, but technologically trivial, APIs and document formats. Control of a focal website where people search for and review products gives Amazon a chokepoint through which it both taxes the revenues of thousands of vendors, large and small, and gathers unprecedented information on consumer purchases. These monopoly models are replicated on a smaller scale in different product niches (see also Kenney and Zysman 2016): for instance, little companies such as Airbnb and Booking.com take 15-25%

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<sup>1</sup> We use “monopoly power” interchangeable with the more general “market power”. This is partly on the familiar grounds that no monopoly is absolute – there is *some* substitute for almost anything one can buy, at some price. Moreover, for many of the cases we are interested in, a model of oligopoly is not appropriate – Google is not a member of an internet search oligopoly, it is a monopoly within its (very considerable) niche.

from the provision of lodging by hundreds of thousands of independent operators around the world.

Many economic activities benefit from network economies, and the problem of their regulation is as old as the division of labor. In the early twentieth century governments faced a problem of monopoly control of new networks in services such as electric power distribution and telecommunications (Wu 2018). While today's digital networks present some of the same issues, the geography of regulation has changed. When the network is a grid for the distribution of electric power, the geographical scope of the monopoly is approximately co-extensive with the monopoly's physical assets and places of employment, and may be regulated (or owned) by a state or local government; for much of the twentieth century, a distinction was made between local and long distance telephone services, which were regulated differently. Today's digital platforms typically project market power over a much wider – often global – territory, and to their home bases represent valuable export industries for which government has limited motivation to regulate them (Iammarino 2018).

Another source of monopoly power is the extension of intellectual property rights and the length of copyrights, as seen in the apparent immortality of Disney's copyright on Mickey Mouse, and the patentability of software, algorithms, genetic code and business models. The market power in many of the IP-related industries has geographic characteristics similar to those of the web-based platforms, with a concentration of headquarters in particular cities. Location provides centers of biotech, pharmaceuticals and media low marginal costs which facilitate the global reach of the monopoly. This projection of monopoly power from a geographically focused base to consumers over a vast space is facilitated by legal and regulatory changes in the monopoly corporations' home countries, and also by the trade policies of those countries, which have come to focus on protection of network privileges and intellectual property rights (Guy 2007; 2009).

A summary of different mechanisms of modern monopoly and examples is given in Table 1.

[Table 1 about here]

The growth of monopoly power since 1980 has occurred under the legal umbrella of an interpretation of the anti-trust law pioneered by Robert Bork (1967). While previously monopoly power was predicted on restraint of trade, the Bork interpretation requires evidence



that consumers are harmed. As the Bork interpretation gained ascendancy in the 1990s, the number of antitrust cases pursued by the Federal Trade Commission dried up. While platform business models take advantage of a new set of technologies, their existence is not a technological inevitability. State Attorneys General in the US, and the European Commission in Brussels, are responding with proposals to adequately regulate the new network platforms.

The implications for employment and wages can be seen in the changing relationship between market value and employment. Figure 2 shows market valuation (as a share of GDP) and employment for the eight largest non-financial, non-oil U.S.-based companies in 1976 and 2016, forty years apart. As per the 2016 market valuations, shares of GDP are around five times higher while employment has fallen by about half. In 2016, seven of the eight companies are based on a network model, with GE as the only non-network company. In 1976, just two of the eight, AT&T and IBM, were a network companies – and these two were outliers in terms of market. (We classify both Microsoft and IBM as network companies on the grounds that their market power grows, or grew, from a proprietary standard which achieved lock-in on the basis of inter-operability). The majority of the 2016 cohort of top companies in terms of GDP share were network companies that had moved to platforms. Most remarkable is the reduced employment relative to market capitalization in 2016.

[Figure 2 about here]

A rough valuation of monopoly power is given by the ration of market valuation to book value – an approximation to Tobin’s Q. For each travel to work area for which we have this information for at least five non-financial firms in both 1980 and 2016, we calculate this ratio on an aggregate basis summing market valuation and assets across all firms in the area, and consider then the change in that ratio between the two years. Results are show in Figure 3. We see large rises in the ratio the technology-heavy cites of the west coast and northeast, and declines in much of the industrial Midwest.

[Figure 3 about here]

The growth of monopoly coincides with the growth of inequality (Piketty and Saez 2003) – a not surprising result, since monopoly exacerbates inequality of income (Khan and Vaheesan 2016) and wealth (Commanor and Smiley 1975). The impact of monopoly on income distribution is examined by Eggertsson, Robbins and Wold (2018), who find that, between 1980 and 2016, financial wealth increased rapidly despite no real increase in the amount of investment

in the economy. Next, the average rate of return on capital has stayed steady while interest rates have dropped. Despite higher profits and lower interest rates, firms have not invested in either their own operations or workforces. The financial value of many firms is now permanently higher than the cost of their assets, due to investment in intangibles such as product differentiation, branding, and advertising in order to maintain market share – a particular type of rent seeking behavior. The share of income going to labor has declined while the share of income going to profits has increased (e.g. Autor et al. 2017).

There are important intra-regional effects. Kemeny and Osman (2018) find that, in the US, following the growth of tech employment, wages in non-tradeable services affected by secondary local job creation rose slightly in real terms; this implies, however, a rise in local income inequality. Lee and Clarke (2019), in a similar study of the UK, find that following the growth of tech employment, wages in non-tradeable services affected by secondary local job creation actually *fell* in real terms.

We note, too, that a growing literature documents depression of wages due to local *monopsony* power. Azar, Marinescu, Steinbaum and Taska (2018) show that in 2016 a majority of U.S. local labor markets could be defined as highly concentrated, with a few employers dominating local demand for workers. This employer concentration dampens wage growth (Benmelech, Bergman and Kim (2018). The increased control of employers over wages is accentuated by low and declining national rates of unionization, regulation of labor market by states and/or localities, and the fact that places can engage in a ‘race to the bottom’ in terms of labor standards so as to attract inward investment (Feldman 1994; 2003; Peck 2001). However, the cases of local job market monopsony are not necessarily the same as those of national or international product market monopoly; whether or not the two tend to co-occur is beyond the scope of this paper.

#### **4. Marshallian externalities meet monopoly power**

Geographic concentrations of economic activity benefit from benign localized external increasing returns. In contrast, monopolies are companies that successfully internalize the benefits of increasing returns. When the two meet, the external returns of tech clusters interact with, and amplify, the internalized increasing returns of platform monopolies. While localized

external increasing returns provide a natural advantage, the more insidious rent seeking behavior of monopoly power provides a powerful dynamic.

Specialized concentrations of innovative firms – iconic places like California’s Silicon Valley or the Route 128 halo around Boston – are often understood as virtuous circles in which localized rivalry between firms generates skills and innovation, raising productivity, wages and profits, and making products that increase social welfare. The functioning of geographic concentrations have been analyzed by Audretsch and Feldman (1996), Best (2001), Feldman (1994; 2003), Iammarino and McCann (2006), Klepper (2011), Moretti (2012), and Storper (2013), among others. Marshall gave three reasons for firms to co-locate: proximity to a pool of skilled labor, knowledge spillovers (“in the air”), and value chain proximity – specialized suppliers and customers (Marshall 1890). Neo-Marshallian work has brought into this picture local public institutions; universities; trade associations, consortia and other manifestations of formal inter-firm cooperation; social networks as facilitators of trust, reduced transaction costs, and knowledge sharing; government R&D spending; and knowledge-seeking multinational corporations (see, among many others, Asheim and Coenen 2005; Bathelt and Li 2013; Bathelt, Malmberg and Maskell 2004; Breschi and Malerba 2005; Cooke 2001; Giuliani 2007; Giuliani and Bell 2005; Iammarino and McCann 2013; Kamnungwut and Guy 2012; Kitagawa 2004; Martin and Sunley 2011; Maskell 2001; Morgan 2004; Steiner and Hartmann 2006; Uyarra 2010). A theme through much of this research, and most of the policies which follow from it, has been that agglomeration economies – though they may owe much to large “anchor tenants” (Feldman 2003) – they do raise both the static and dynamic innovative productivity of relatively small firms, to the extent that a resource rich agglomeration is often seen as a place where SMEs and entrepreneurial newcomers can compete with established giants. This view began with studies of intermediate technology industries in Italy and Germany (e.g. Becattini 1989; Schmitz 1992), but was quickly extended to the Silicon Valley in Saxenian’s (1994) classic study, in which the apparently free flow of knowledge in that cluster was contrasted with the secretive, vertically integrated environs of Boston. Yet Silicon Valley was created as much by venture capitalists and intellectual property lawyers in the search for new business models as by the free flow of engineering knowledge (Kenney and Florida 2000; Suchman 2000).

Monopoly can both amplify Marshallian and neo-Marshallian external economies, and create new external economies. The amplification can be seen in the enhanced value to

companies, or seeking market power, of skilled labor and of knowledge spillovers. In the winner-takes-all world of platform monopoly, the value of technical staff who are even slightly better, and of technical and market intelligence that is even slightly more complete or up to date, might make the difference between market dominance and irrelevance (Rosen 1981; Sattinger 1979). This geographic concentration has not necessarily been positive, with rocketing real estate costs, rising homelessness, and transportation problems – conditions that suggest diseconomies of scale.

The new localization economies are also found in finance and the related market for corporate control. The ecology of platform economy start-ups and their growth, or successful exit through IPO or acquisition, rewards proximity both to venture capitalists and to large firms in related segments. In industries such as web services, software, and biotechnology, general purpose technologies are being used to craft products or systems which have the potential to dominate particular market segments (e.g. Zeller 2007). For both founders and investors, these start-ups are speculations on potential monopoly. Venture capital, as a form of capital favors potential monopolies, with scale-ability and high returns. While a few start-ups grow large, most either fail, or are acquired by larger firms; being acquired on favorable terms is the principal business objective for the founders and the venture capitalists. A strategy of the larger firms, the Apples, Googles and Facebooks, is to either acquire, or kill their younger competitors. Proximity mutually benefits the strategies of both the large incumbents and the start-ups.

Venture capitalists and their investments tend disproportionately to agglomerate in such clusters and in the city-regions that host them. This has reinforced relationships of spatial dominance and dependence – or territorial hierarchies – between monopoly-based clusters and areas relying on competitive industries in the U.S. (Audretsch and Feldman 1996; Feldman and Florida 1994; Susman and Schutz 1983). In Europe, there is more variation, which reflects patterns of spatial organization of industrial production and capital markets differences across countries (Klagge and Martin 2005; Martin, Sunley, and Turner 2002; Martin et al. 2005).

## **5. Not “left behind”, but “held back” places**

Far from offering a model for the places left behind, agglomerations of techno-monopoly actively hold other places back. Big agglomerations of techno-monopoly hold others places back in three ways: by appropriating revenues which are effectively a tax on almost all business

activities in most parts of the world; by restricting use of basic knowledge and thus degrading capabilities; and, in partnership with the financial sector, by diverting capital from other firms and regions.

Monopolies, by their nature, set prices and extract rents from their customers. Current technology monopolies are collecting taxes based on the global distribution of their products like ancient empires exacting tribute from distant provinces and returning them to spatially concentrated bases. Microsoft produces its Windows and Office products in the Seattle area, and harvests license fees globally, as does Monsanto (Bayer) for the seed varieties and complementary herbicides engineered in St Louis. Booking intermediaries like Airbnb, Trip Advisor, Booking.com, Expedia (Microsoft, again), and Uber take significant slices of revenue from many thousands of globally dispersed small businesses. Companies which once bought advertising from local newspapers now buy it from Google or Facebook, which may in turn distribute it through the online version of that same newspaper, but having again taken a generous fee: in 2017, 61% of Web advertising revenues globally, and 25% of *all* media advertising revenues, went to Google or Facebook (WARC 2017). Amazon takes its cut from all of the small businesses that sell via its marketplace – and keeps the sales record and customer information. Indeed, 21 large companies, with publicly traded shares, are generating 10 percent or more of their revenue from sales through Amazon.<sup>2</sup> Relationships with consumers are mediated and controlled by platforms, and knowledge about consumer preferences is a knowledge asymmetry difficult for new entrants to overcome (Zuboff 2019). In spatial terms, this redistributes wealth from around the world, to the shareholders and employees of the platform companies – disproportionately found in a few privileged places.

We have seen above that the digital platform monopolies make their money by controlling our access to previously open networks. This affects us not only as consumers of digital services, but as potential producers of such services. Computer software is the ubiquitous tool of the modern age; millions are urged to learn to code, and shortages of coders are proclaimed (Cappelli 2014), but the barriers to entry in the software market also serve to discourage the use of programming skills. Companies such as Microsoft, Adobe, Apple, and

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<sup>2</sup> <https://www.cnbc.com/2017/12/21/as-amazons-dominance-grows-suppliers-are-forced-to-play-by-its-rules.html>

Oracle owe their success to preventing the spread of open source software into their markets<sup>3</sup>. In every town and every business and every government office, this limits the ability of technical staff to customize the software products. It is hard to overstate the implications: not only is adapting software to an organization's own purposes locally-based skilled work, but it develops a product and capabilities that can be sold to others. The mechanisms which ensure the continued monopoly position of a company like Microsoft concentrate the adaptation of software both organizationally and spatially (Raymond 1998; Stallman 1985).

The interaction of monopoly with institutions of education and research further limits access to knowledge and capabilities. Scientific knowledge is in any case spatially concentrated (e.g. Audretsch and Feldman 1996; Feldman and Florida 1994), but consider how monopoly contributes to this. For example, commercial academic publishers make it costly to access the latest research results, something small, poor or remote colleges and universities – to say nothing of independent scholars and public libraries – often cannot afford. The universities which can afford comprehensive access to recently published scientific research are disproportionately in the same technology or financial centers as the monopoly companies: such spatial coincidence characterizes many global cities such as New York or London (e.g. Beaverstock and Smith 1996).

A decentralized university system has been a long source of American scientific leadership, with research universities located in every state. Previously the best students in the heartland would attend local universities. Increased income inequality and the concentration of highly paid jobs in particular regions have combined to draw the best students toward a more select group of universities, disproportionately located in or near the technology, finance and government clusters on the coasts (for the US, Fallah, Partridge, and Rickman 2013; for the UK, see Faggian and McCann 2009). Even to the extent that university research remains decentralized, its commercialization – spurred by the Bayh-Dole Act of 1980 – has the effect of financializing new discoveries (Eisenberg and Cook Deegan 2018).

And, finally, finance: growing monopolies, and start-ups which are prospective monopolies, represent investments with high expected returns; the financial sector facilitates the movement of capital out of firms with lower returns (i.e., firms operating in more competitive

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<sup>3</sup> This is not to say that such software is not *used* – the software strategy of Apple and Google is to build on top of open source software, and find ways to lock down access; Amazon's vast server farms run Linux.

markets), and into firms with monopoly power or monopoly prospects. This has the effect of bleeding capital out of *places* which have relatively weak monopoly presence. How this comes about is tied up with liberalization of the financial sector, which has occurred in parallel with the relaxation of anti-trust rules and with the deregulation of industry, since ca. 1980. We provide detail in the next section.

## 6. Finance: feeding monopoly, holding others back

As recently as the 1970s, the typical medium- or large American firm was largely self-financing: it paid a bit of its cash flow out to shareholders as dividends, and used the rest for capital expenditure. Most capital expenditure was paid for in this way; financing capital expenditure with high levels of borrowing or new issues of stock was rare. When a firm's cash flow and capital expenditures were in balance, financial sector actors – banks, minority shareholders, and so on – had little influence over how a firm conducted its business. Today, the median firm is now paying substantially more of its cash to its shareholders or for acquisitions of other firms. Following Rajan and Zingales (1998), we define the imbalance between a firm's cash flow and capital expenditure as *financial dependence* (FD):

$$FD = (\text{Capital expenditure} - \text{cash from operations}) / \text{Capital expenditure} \quad (1)$$

We think of a firm's financial dependence as the departure of FD from zero – large positive or negative values of (1) indicate engagement with the financial sector. When the numerator of (1) is positive, the firm's capital expenditures exceeds its cash flow from operations; unless it has accumulated liquid assets in earlier years, the firm must obtain additional funds from the financial sector. When the numerator is negative, the firm is generating cash in excess of its capital expenditure; this again brings it into engagement with the financial sector, as the firm makes discretionary payments to shareholders in the form of dividends, invests in financial assets, or acquires other firms.

In Figure 4, we examine the 3,000 largest non-financial firms, as defined by sales, in the Compustat database in each year from 1971 to 2018. We rank these firms by financial dependence. In the first panel we plot, for each year, three points from the distribution - the 20<sup>th</sup>, 50<sup>th</sup>, and 80<sup>th</sup> percentiles. In the second panel we plot FD for the firms at the 90<sup>th</sup> and 10<sup>th</sup> percentiles, left out of the first panel for reasons of scale.

[Figure 4 about here]

We see in the first panel of Fig. 4 that, prior to the year 2000, the median firm in this sample was self-financing, with modest payouts of less than its capital expenditure. Between 2000 and 2002, payouts from the median firm rose. From 2000 onwards, but with a surge in 2009, following the financial crisis, payouts are approximately equal to capital expenditure ( $FD \approx -1$ ).

Even more striking – and of greater interest to us – is the increased *dispersion* of financial dependence among firms, the rise of financial dependence (positive or negative) in the tails of the distribution. Before 2000, the firm at the 20<sup>th</sup> percentile of FD had cash flow of three times its capital expenditure ( $FD = -2$ ); from 2002 onwards that figure is five times ( $FD = -4$ ). Looking to positive values (capital expenditure > cash flow) of FD for the 80<sup>th</sup> percentile of the distribution, the change is less dramatic and more obviously affected by movements in financial markets (the burst of the dot com bubble in 2000-2001; the financial crisis of 2008), but the trend is upward. This picture is confirmed when we look further out in the tails (10<sup>th</sup> and 90<sup>th</sup> percentiles).

Where this aggregate outflow *goes* is of course a question: it might be, for instance, to firms not in this sample because they are privately held or foreign; or it is consumption by shareholders. We cannot know that from this sample. The point to bear in mind is that greater dispersion of FD, positive and negative, means a larger role for the financial sector. Because positive and negative financial dependence are different, there is no reason to expect positive and negative values to be symmetrical in terms of their impact on firms. Nonetheless, the growing departure from self-financing ( $FD = 0$ ) is usefully illustrated by plotting the median of absolute values of financial dependence for each year (Figure 5).

[Figure 5 about here]

Normative financial economics has regarded the rise of financial dependence as a good thing. To understand the connection between finance, monopoly, and disinvestment, it helps to start from the arguments in its favor. Increased financial dependence is taken as an indicator of the increased efficiency of financial markets, better fulfilling their role of enhancing overall economic efficiency by moving capital from less productive to more productive uses (Rajan and Zingales 1998). This role can be conceptualized in two distinct, but complementary, ways. One is that financial dependence lowers the barriers to the firm's *use* of the financial sector either to increase capital investment or, in the absence of profitable internal opportunities, to redirect free cash flow to financial markets and thus to fund investment elsewhere. The other sees a conflict



between the interests of the firm's insiders (in the simplest version, managers) and external financial claimants (shareholders, creditors). In this case, financial dependence helps external claimants to monitor corporate managers and to *enforce* the payout of "free cash flow", which is to say any cash (or assets that can be converted into cash) which could get a higher return elsewhere (Manne 1965; Jensen and Meckling 1976; Fama 1980).

Notice that market power is absent from this theory: the proposition that efficiency is enhanced by forcing firms to disgorge free cash flow assumes that the higher returns available elsewhere are higher because the capital is actually more productive in the alternative use. The implicit model is a competitive market without market power, but with variations in the profitability of firms due to differences in managerial practice, industry life cycle, or simple random bad luck. If the higher returns are instead found by investing in actual or prospective monopolies, then the mechanism describes not efficient allocation of capital, but the stripping of assets from perfectly viable firms in order to finance rent seeking.

In line with the prescriptions of these theories, reforms since the late 1970s to banking, securities regulation, pensions, and corporate governance, have increased the influence of the financial sector over non-financial firms. In addition to the claims of economic efficiency, these changes acquired the political rationale of defending the rights of minority shareholders, a constituency greatly expanded by pension reforms (O'Sullivan 2001; Gourevitch and Shinn 2005). Enhanced shareholder rights together with new liquidity in financial markets – thanks in part to the pension reforms, and later the 1999 repeal of the Glass-Steagall Act – led to the institution of leveraged takeovers. As described and prescribed by Jensen (1989), this practice has the explicit purpose of loading a firm up with debt so that its managers will be forced to pay out cash (their free cash flow), in the form of high fixed interest payments. The practices Jensen described have become the tools of the private equity trade.

This regime of high financial dependency, or financialization, has been described as one in which finance is disconnected from the real economy (Corpataux, Crevoisier, and Theurillat 2017; and other papers in Martin and Pollard 2017), and alternatively one in which finance rules the real economy, with the interests of shareholders (or often, in practice, of financial sector institutions) overriding the interests of all other stakeholders in a firm (Lazonick 2010; Appelbaum and Batt 2014).

Financialization can be faulted on various grounds, both of efficiency and of distribution. Our particular concern here are its interaction with monopoly, and the spatial consequences of that interaction. Over forty years ago, Harvey wrote that “The perpetual tendency to try to realize value without producing it is, in fact, the central contradiction of the finance form of capitalism. And the tangible manifestations of this central contradiction are writ large in the urban landscapes of the advanced capitalist nations.” (Harvey 1974, 254).

With spatially concentrated monopoly, the monopoly-driven reallocation of capital accentuates the inflow of capital to monopoly firms and the places in which monopolies invest, and outflows from other firms and the places in which they are located (Myrdal 1957). This, together with the effective tax imposed globally by use of monopoly services, and the withholding of access to basic knowledge and tools, is the third obstacle posed by spatially-concentrated monopoly to the growth or revival of the places that are *not* homes of monopoly or privileged parts of their networks.

The financial sector has its own geography as well. The reduction of financial resources for held-back places has been intensified by the growing industrial and spatial concentration of commercial banking: between 1994 and 2018, the Herfindahl-Hirschman Index (HHI) for spatial concentration (by commuting zone) of US commercial banking grew from 0.0199 to 0.030 for deposits and 0.0497 to 0.1150 for assets (authors’ calculation from FDIC data). Bank headquarters are still more spatially concentrated, and corporate finance more yet again. The fortunes of the good jobs in corporate finance have followed those in the non-financial monopoly sectors: Philippon and Reshef (2012) show that during postwar decades of tight financial regulation, financial sector workers earned less than engineers with comparable educations, while in the deregulated (which is to say, financialized) market since 1980, they earn more (see also Levy and Temin 2007). The financial sector siphons funds to the monopolists from places and firms that have been left behind, and it is paid well for its activities, maintaining metropolitan New York as concentration of wealth alongside the Silicon Valley and other technology centers.

The relationship between monopoly and financialization is certainly correlated and discussions of causality are beyond our descriptive analysis. We do not know if monopoly power would have grown without financialization or if financialization is driven by the demand from growing or prospective monopolies. Certainly, both financialization and the growth of

monopoly are artefacts of the same neoliberal deregulation agenda. These are research questions that beg for further analysis.

## **7. Implications and conclusion**

In America it is now common to speak of Red States and Blue States as if they were natural categories. Yet, this political division reflects stark differences in economic realities, with the technology clusters of Silicon Valley, Seattle, Boston, and San Diego; New York, the center of finance, and Washington, where the rules that govern both monopoly and finance are determined, all doing well. Places that were doing well in the 1980 but have lost ground and have diminished prospects have become known as the Red States, voting in ways that seem to run contrary their economic interest but reflecting a deep dissatisfaction with the status quo.

This stark divide, rather than an inevitable outcome of agglomeration economies or market forces, reflects the rise of monopoly and financial power, something that the economic geography literature seems to have forgotten. Place-based policies have been long eschewed, however, the revolt of places “that don’t matter” (A. Rodríguez-Pose 2018) or, as we have argued places that are *held back*, requires new solutions. Local economic development policies that focus on generating increasing returns to place, finding the right industrial niche or smart specialization and attracting established companies or enabling entrepreneurs have not generated sufficient results for the majority of the population. Current strategies will never work if today’s regional income disparities are not the product of agglomeration economies but are the outcome of the exercise of monopoly power. Monopoly conditions limit entrepreneurial entry and those few firms that are able to succeed will be pulled away from their original location to relocate to the centers of monopoly power. Incumbent giants and the search for new monopoly business models will continue to reinforce localized external increasing returns to create mega cities. Against these giants or as they are increasingly called star cities, it is difficult for other localities to claim any advantage.

The most urgent task to address regional income disparities is to reverse the rise of monopoly power. In the U.S. case, monopoly intensifies agglomeration economies, making geographic concentrations of prosperity into fortresses. Local economic development initiatives in the held back regions are bound to be ineffective if the power of these monopolies is unrestricted. Breaking monopoly power, however, proves to be tricky: monopoly power has

become a key element of the U.S. international competitiveness. The non-financial monopolies themselves are politically powerful, and their symbiotic relationship with the financial sector gives Wall Street and the monopolies a common interest in the status quo. Yet, regulation of monopoly power and the financial system has worked previously in the United States and needs to be carefully designed to work now. Efforts of US State Attorneys Generals and of the European Commission signal a realization that these platform business models are not a technological inevitability, but are equally due to governments' failure to regulate the new networks adequately.

The degree to which a similar situation prevails in other countries outside the US is not clear. While De Loecker and Eeckhout (2018) do find rising market power over the same period in OECD countries, the U.S. has a unique concentration of tech-monopolies. The role of the financial sector differs greatly between countries and among the varieties of capitalistic systems (Hall and Soskice 2001), as does the spatial concentration of good jobs. Yet many other countries emulate the U.S. model, and the extent to which multinational corporations are replicating the U.S. pattern globally still need be accurately measured. Trends indicate that this may indeed be the case. Our future agenda is to model empirically some of the relations we have described in the present paper. We hope others will join in the study of finance and market structure as a topic of economic geography inquiry and provide theory, empirical work and policy recommendations to address regional disparities.

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1980

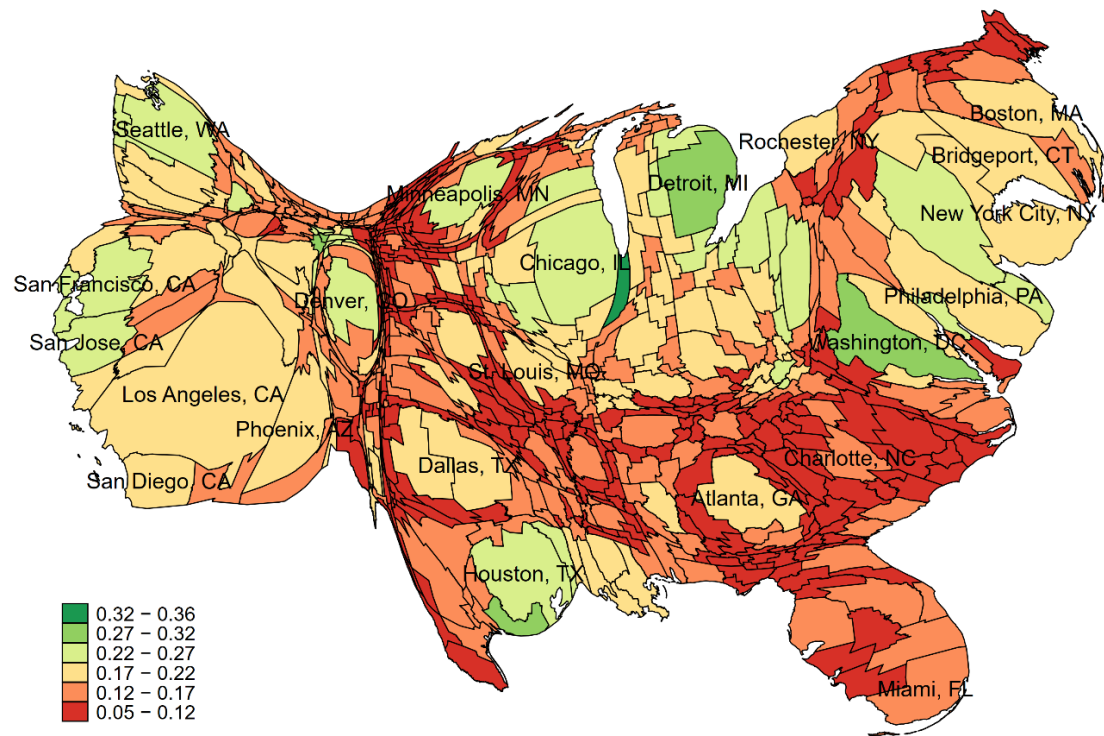


Figure 1a

Where were the good jobs? Share of employed persons earning above the 80<sup>th</sup> percentile of the national distribution, 1980.

2016

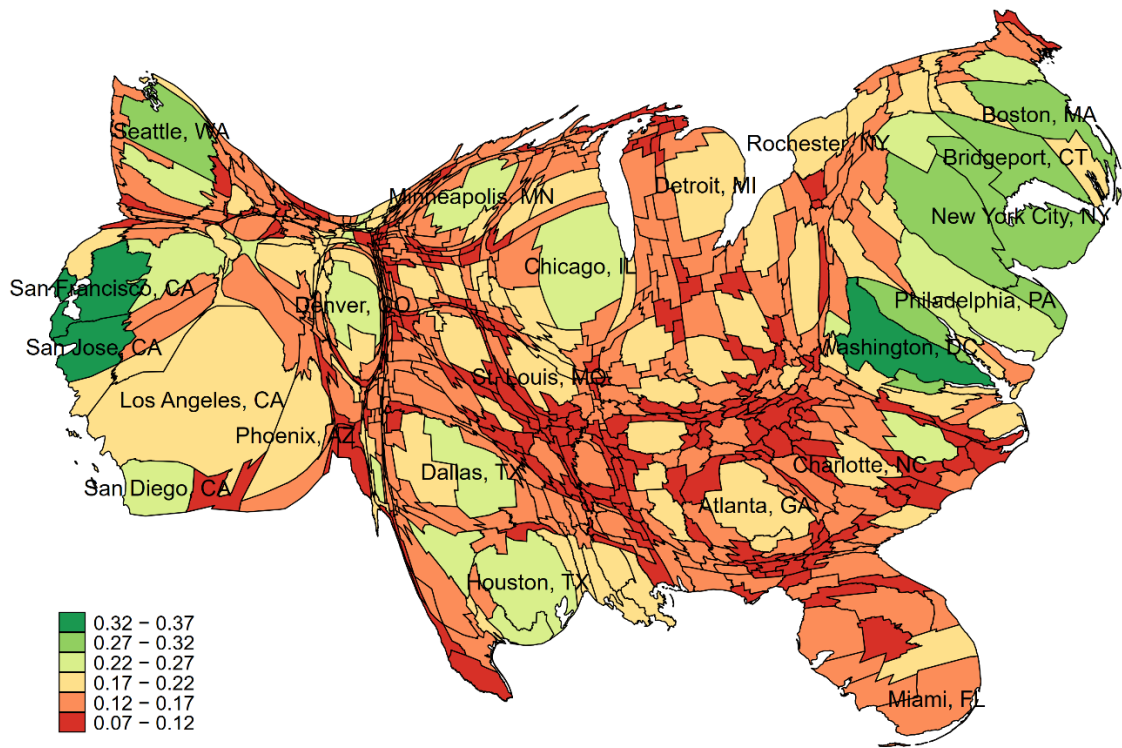
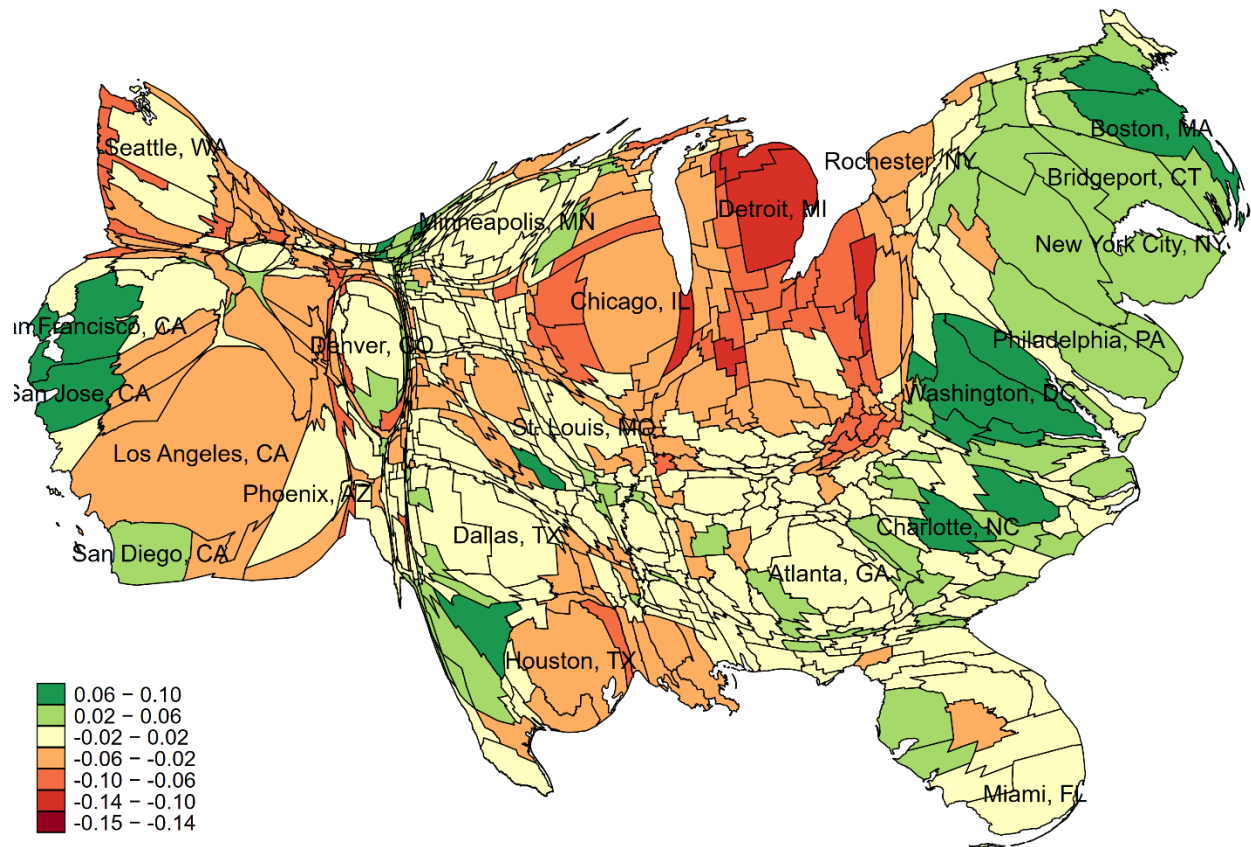


Figure 1b

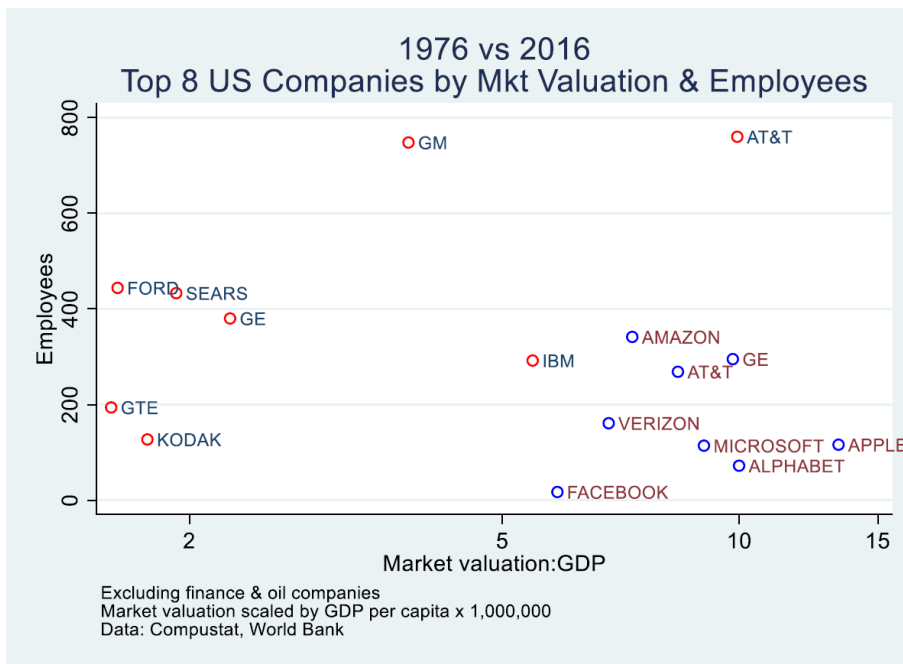
*Where are the good jobs? Share of employed persons earning above the 80<sup>th</sup> percentile of the national distribution, 2016.*



*Which places have been getting more (or fewer) good jobs?*

*Figure 1c*

Change in the share of jobs with earnings above the 80<sup>th</sup> percentile nationally.



The giants in 2016: fewer employees, higher market valuations.

● In 2016, seven of the eight are based on network products.

● In 1976, the two with the highest market valuations (AT&T and IBM) were both based on network products.

Figure 2

US based companies; both market valuations and employees are world-wide.

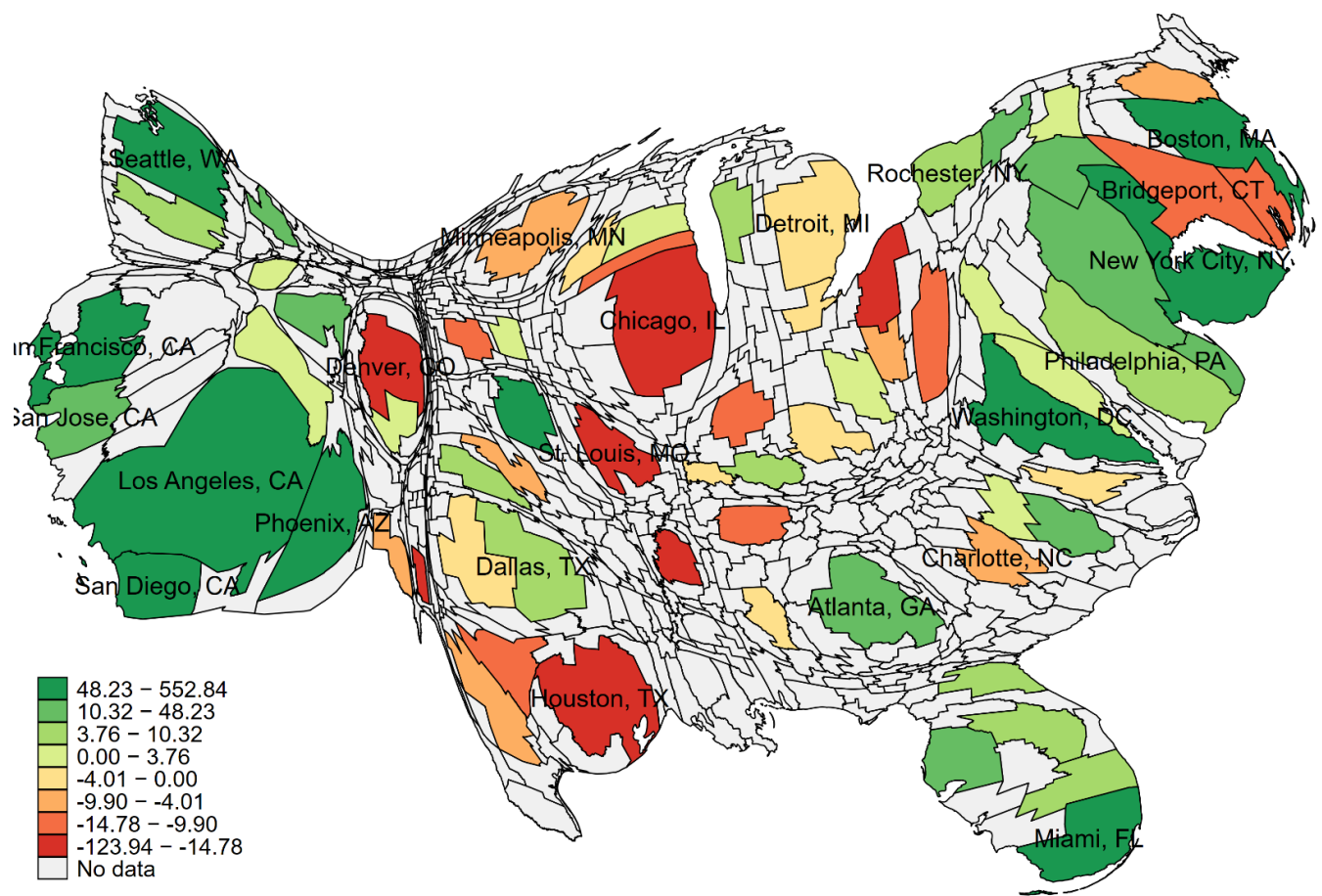
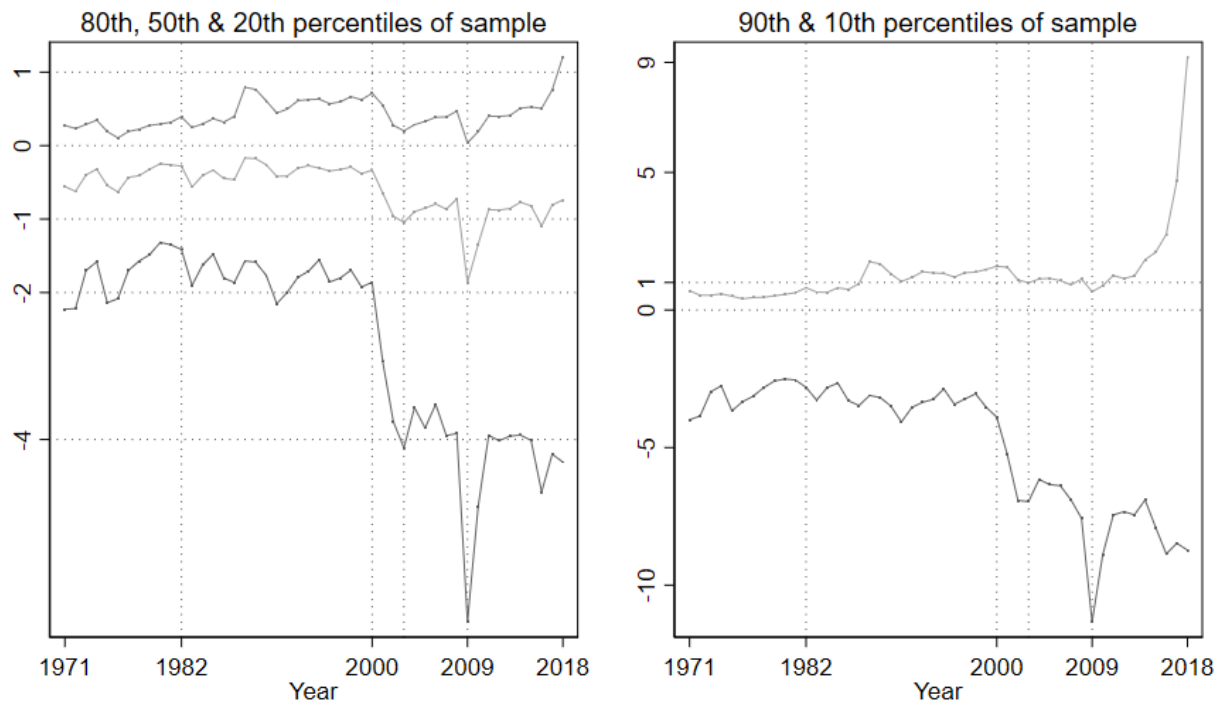


Figure 2

*Change in ratio of market capitalization to book value of assets, 1980 to 2016. Shown are all commuting zones for which this data was available in Compustat for at least five non-financial firms in both years.*

## Growth of financial dependence



Statistic is  $(\text{Capital expenditure} - \text{Cash from operations}) : (\text{Capital expenditure})$   
 US non-financial public corporations; 3,000 largest, by sales, in each year  
 Data: Compustat

Figure 3

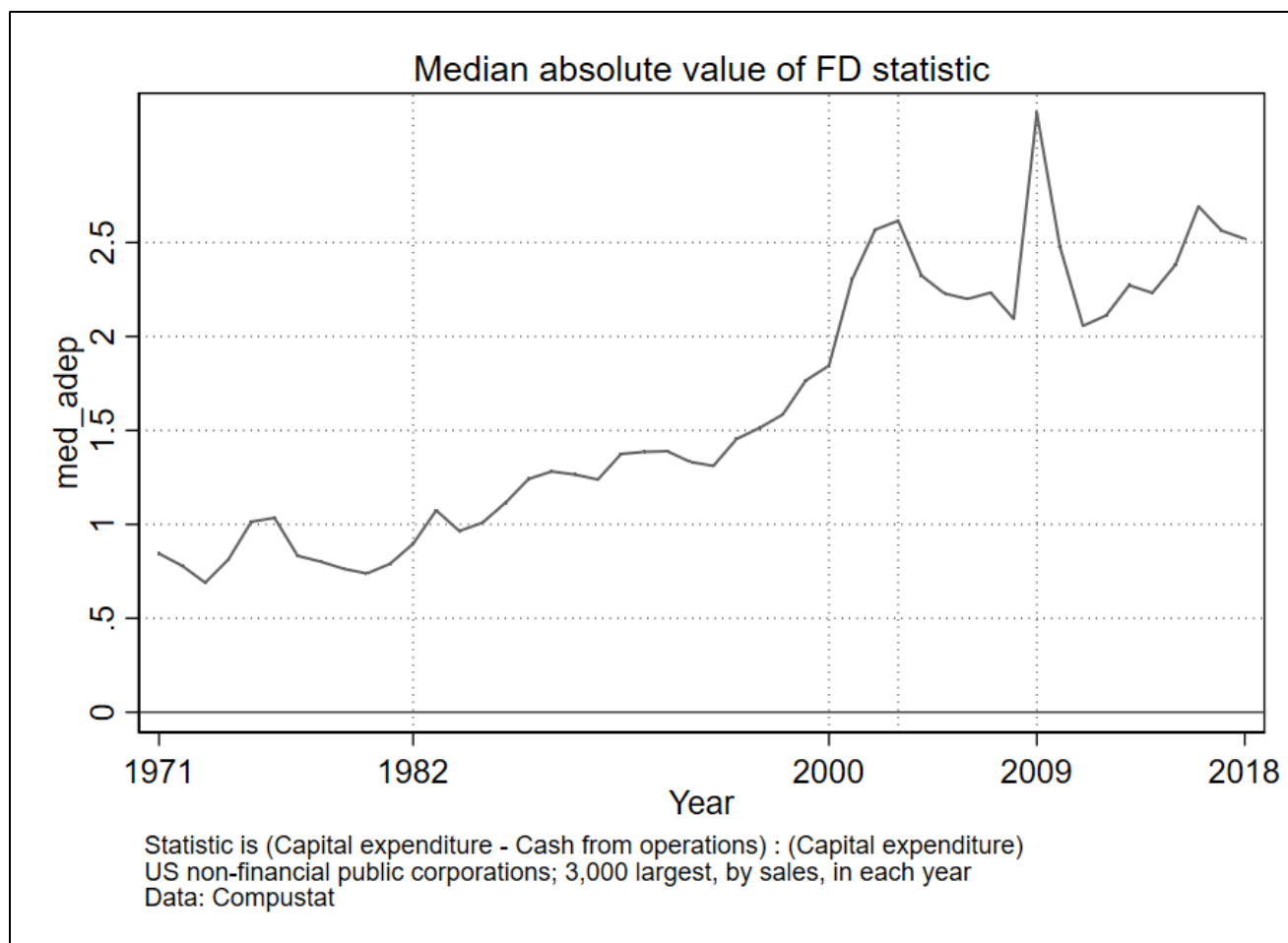


Figure 4



**Table 1 - Walled gardens: how platform companies enforce monopoly**

<b>Interface standards to prevent emergence of competing products</b>
<ul style="list-style-type: none"><li>• Microsoft: document formats &amp; Windows APIs. Has prevented competing (often free) desktop applications &amp; PC operating systems. Note that the threat is not copying Microsoft's software – it is free communication with it!</li><li>• Apple maintains similar control of its system (which is, ironically, built on top of the open source operating system BSD Unix)</li></ul>
<b>Sale to advertisers of personal information from search or social networks</b>
<ul style="list-style-type: none"><li>• What Google &amp; Facebook do</li><li>• Also, any social network (Twitter, Instagram...) – the others just aren't as successful as the big two</li></ul>
<b>Tollgates to network products</b>
<ul style="list-style-type: none"><li>• Google uses Android (built on open-source Linux) as gate-keeper for phone aps; Apple does the same for iPhone</li><li>• Amazon: search, reviews, fulfillment</li><li>• Academic publishing – Elsevier, Springer, Taylor &amp; Francis. The network is the journal's history &amp; reputation.</li><li>• Bookers: Trip Advisor, Booking.com, Airbnb, Expedia, Uber ...</li></ul>
<b>Simple intellectual property</b>
<ul style="list-style-type: none"><li>• Pharma</li><li>• Biotech – Monsanto's seeds</li><li>• Hollywood</li></ul>
<b>Old fashioned networks, wired &amp; wireless</b>
<ul style="list-style-type: none"><li>• Deregulation, privatization, and the advent of mobile have made telecoms and television networks into sources of some of the world's great new fortunes</li></ul>